****This document focus on** assignments and interview-style questions **focused on** Functions and Scope in C**, structured** topic-wise **for practice:****

### 🔹 ****1. Basics of Functions****

**Assignments:**

* Write a function that calculates the factorial of a number.
* Create a calculator using functions for each operation: add, subtract, multiply, divide.
* Implement a function that reverses a string.

**Interview Questions:**

* What are the benefits of using functions in C?
* Explain the difference between function declaration and function definition.

### 🔹 ****2. Function Arguments (Call by Value vs Call by Reference)****

**Assignments:**

* Write a function that swaps two numbers using call by value (observe no effect).
* Then, implement swapping using call by reference using pointers.
* Write a function that modifies an array passed to it. Analyze how arrays behave as arguments.

**Interview Questions:**

* What is the difference between passing by value and passing by reference in C?
* Can you pass an entire structure to a function? If yes, how?

### 🔹 ****3. Return Types and Recursion****

**Assignments:**

* Write a recursive function to calculate the nth Fibonacci number.
* Implement a recursive function to compute the power of a number.
* Design a function that returns a structure (e.g., details of a student).

**Interview Questions:**

* When should recursion be preferred over iteration?
* What happens if a function doesn't explicitly return a value?

### 🔹 ****4. Scope and Lifetime of Variables****

**Assignments:**

* Demonstrate the difference between global, local, and static variables.
* Create a function that uses a static variable to count how many times it’s been called.
* Show how variable shadowing works in nested blocks.

**Interview Questions:**

* What is the difference between static and extern?
* How does the lifetime of a static local variable differ from a regular local variable?

### 🔹 ****5. Inline Functions & Storage Classes (Advanced)****

**Assignments:**

* Write a small code snippet using all storage classes: auto, register, static, extern.
* Use header files and extern to access a global variable across files.

**Interview Questions:**

* Why would you declare a function as inline?
* What does the register storage class do? Is it still relevant today?

Would you like a printable PDF or a GitHub-ready markdown version of these assignments?